



## Model Number

**UB400-12GM-E5-V1**

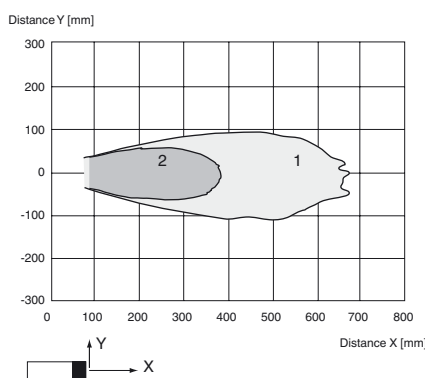
Single head system

## Features

- **Switch output**
- **5 different output functions can be set**
- **Program input**
- **Temperature compensation**

## Diagrams

### Characteristic response curve



## Technical data

### General specifications

Sensing range	30 ... 400 mm
Adjustment range	50 ... 400 mm
Dead band	0 ... 30 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 310 kHz
Response delay	approx. 50 ms

### Indicators/operating means

LED yellow	indication of the switching state flashing: program function object detected
LED red	solid red: Error red, flashing: program function, object not detected

### Electrical specifications

Operating voltage $U_B$	10 ... 30 V DC, ripple 10 % <sub>SS</sub>
No-load supply current $I_0$	≤ 30 mA

### Input

Input type	1 program input operating distance 1: $-U_B$ ... +1 V, operating distance 2: +6 V ... $+U_B$ input impedance: > 4,7 kΩ program pulse: ≥ 1 s
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### Output

Output type	1 switch output PNP Normally open/closed, programmable
Rated operating current $I_e$	100 mA, short-circuit/overload protected
Default setting	Switch point A1: 50 mm Switch point A2: 400 mm
Voltage drop $U_d$	≤ 3 V
Repeat accuracy	≤ 1 %
Switching frequency $f$	≤ 8 Hz
Range hysteresis $H$	1 % of the set operating distance
Temperature influence	± 1.5 % of full-scale value

### Ambient conditions

Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)

### Mechanical specifications

Connection type	Connector plug M12 x 1, 4-pin
Degree of protection	IP67
Material	
Housing	brass, nickel-plated
Transducer	epoxy resin/hollow glass sphere mixture; foam polyurethane, cover PBT
Mass	25 g

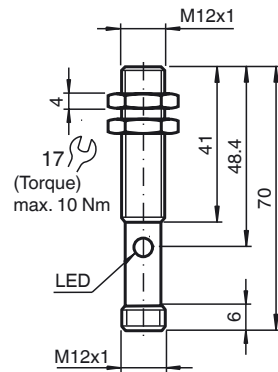
### Compliance with standards and directives

Standard conformity	
Standards	EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012

### Approvals and certificates

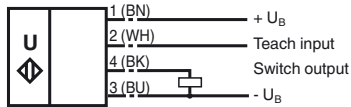
UL approval	cULus Listed, Class 2 Power Source
CCC approval	CCC approval / marking not required for products rated ≤36 V

## Dimensions



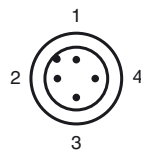
## Electrical Connection

Standard symbol/Connections:  
(version E5, pnp)



Core colours in accordance with EN 60947-5-2.

## Pinout



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

## Additional Information

### Programmable output modes

- Window mode, normally open mode  
A1 < A2: object distance
- Window mode, normally closed mode  
A2 < A1: object distance
- One switch point, normally open mode  
A1 -> ∞: object distance
- One switch point, normally closed mode  
A2 -> ∞: object distance
- A1 -> ∞, A2 -> ∞: Object presence detection mode  
Object detected: Switch output closed  
No object detected: Switch output open

## Accessories

### UB-PROG2

Programming unit

### BF 5-30

Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm

### BF 12

Mounting flange, 12 mm

### BF 12-F

Plastic mounting adapter, 12 mm

### V1-G-2M-PVC

Female cordset, M12, 4-pin, PVC cable

### V1-W-2M-PUR

Female cordset, M12, 4-pin, PUR cable

### UVW90-M12

Ultrasonic -deflector

## Adjusting the switching points

The ultrasonic sensor features a switch output with two teachable switching points. These are set by applying the supply voltage  $-U_B$  or  $+U_B$  to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s. LEDs indicate whether the sensor has recognised the target during the TEACH-IN procedure. Switching point A1 is taught with  $-U_B$ , A2 with  $+U_B$ .

Five different output functions can be set

1. Window mode, normally-open function
2. Window mode, normally-closed function
3. one switching point, normally-open function
4. one switching point, normally-closed function
5. Detection of object presence

### TEACH-IN window mode, normally-open function

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Set target to far switching point
- TEACH-IN switching point A2 with  $+U_B$

### TEACH-IN window mode, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Set target to far switching point
- TEACH-IN switching point A1 with  $-U_B$

### TEACH-IN switching point, normally-open function

- Set target to near switching point
- TEACH-IN switching point A2 with  $+U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$

### TEACH-IN switching point, normally-closed function

- Set target to near switching point
- TEACH-IN switching point A1 with  $-U_B$
- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A2 with  $+U_B$

### TEACH-IN detection of objects presence

- Cover sensor with hand or remove all objects from sensing range
- TEACH-IN switching point A1 with  $-U_B$
- TEACH-IN switching point A2 with  $+U_B$

## LED Displays

Displays in dependence on operating mode	Red LED	Yellow LED
<b>TEACH-IN switching point:</b>		
Object detected	off	flashes
No object detected	flashes	off
Object uncertain (TEACH-IN invalid)	On	off
Normal operation	off	Switching state
Fault	on	Previous state

## Installation conditions

If the sensor is installed at places, where the environment temperature can fall below 0 °C, for the sensors fixation, one of the mounting flanges BF 12, BF 12-F or BF 5-30 must be used. In case of direct mounting of the sensor in a through hole, it has to be fixed at the middle of the housing thread.



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